

REMARKS

This amendment responds to the office action mailed December 3, 2002. In the office action the Examiner:

- Rejected claims 1, 5 and 15 as being indefinite under 35 U.S.C. 112, second paragraph.
- Rejected claims 1-4 and 7-25 under 35 U.S.C. 102(e) as anticipated by Nagano (U.S. Patent No. 6,014,359). We will treat the 35 U.S.C. 102(e) rejection as a 35 U.S.C. 103 rejection as well, and respond accordingly.
- Rejected claims 5-6 and 26-28 under 35 U.S.C. 103(a) as being unpatentable over Nagano.

After entry of this amendment, the pending claims are: claims 1-2, 5-7, 10-11, 14-16, 21, 23-25, and 27-28.

Request for Finality of Office Action to Be Withdrawn

Applicants respectfully request that the Examiner reconsider the finality of the present action, because the 35 U.S.C. 112 rejections are a new ground for rejection. This office action is premature under MPEP 706.07(a) and (c), as it introduces a new ground of rejection that is not necessitated by an amendment or an information disclosure statement. The amendments filed in response to the first office action, dated July 31, 2002, only added to the existing "wherein" clauses of claims 1, 5 and 15 as originally filed. The present office action states that the "functional whereby/wherein" statement makes these claims indefinite. The prior amendments to the claims did not make these "wherein" clauses any more "functional" than the original claims. As such, this rejection could have been made in the first office action on original claims 1, 5 and 15, but it was not done at that time.

Applicants request that the finality of this action be withdrawn in accordance with MPEP 706.07(d).

35 U.S.C. 112, Second Paragraph, Rejections

Applicants respectfully traverse the rejection of claims 1, 5 and 15 under 35 U.S.C. 112.

In re Mason, 114 USPQ 127, 44 CCPA 937 (1957), does not stand for the proposition that a "functional whereby/wherein" statement always renders a claim indefinite. Rather, Mason states that a claim limitation that is **solely functional** "does not define any structure and accordingly cannot serve to distinguish claims ... which are not process claims." Mason, 114 USPQ 127, 129. That case along with MPEP 2173.05(g) allows for functional wherein clauses as long as they do not cause indefiniteness.

The wherein clauses in pending claims 1, 5 and 15 are not solely functional, as they add structural configuration limitations to the included elements. Specifically, they explain how the quarter wave retarder plate is disposed and how the laser apparatus is configured to direct the reflected light. These wherein clauses give further detail to the configuration (i.e. order and location) of the various structural elements of the claimed apparatus.

Applicants respectfully request that the Examiner withdraw these 35 U.S.C. 112 rejections.

35 U.S.C. 102(e) Rejections

The amendments to independent claims 1 and 15 are supported at least by: the specification at page 7, lines 14-21; and Figures 4 and 5. No new matter has been added by these amendments.

Claim 1

As amended, independent claim 1 recites in pertinent part: "the laser apparatus, including the quarter wave retarder plate, is configured to direct the reflected light, polarized orthogonally to the light emitted by the laser, back

in a direction of the laser **and at least partially back into the laser.**" This is not taught or suggested by Nagano, and Nagano provides no motivation or suggestion to so modify its disclosed apparatus. Nagano may teach directing the light back in a direction of the laser for some distance short of returning the light to the laser, but it does not teach directing the light at least partially back into the laser. Rather, Nagano goes to great lengths to direct the light away from the laser and toward light detectors that are separated from that source (See, e.g., Nagano, column 5, lines 16-22, and figures 2, 5 and 8).

Respectfully, Nagano does not teach the invention to which independent claim 1 is directed, nor claims 2, 14 and 24 that depend from claim 1. Nagano also does not teach the invention to which independent claim 15 is directed, nor claims 16, 21, 23 and 25 that depend from claim 15.

Claims 7 and 11

A) Light is directed at least partially back into the Laser

New independent claim 7 is supported at least by: original claims 1 and 7; Figures 4, 5 and 7A; and the specification at page 7, lines 14-21, and page 8, lines 25-31. New independent claim 11 is supported at least by: original claims 1 and 11; Figure 7C; and the specification at page 9, lines 1-10. No new matter has been added by these amendments.

Claims 7 and 11 now recite in part: "the laser apparatus ... is configured to direct the reflected light, polarized orthogonally to the light emitted by the laser, back in a direction of the laser **and at least partially back into the laser.**" As described above in relation to claims 1 and 15, Nagano does not teach or suggest this limitation, and therefore claims 7 and 11 should be allowable for at least the same reasons.

B) Inherency / Hermetically Sealed Housing

Further, claims 7, 11 and 15 each recite a **hermetically sealed housing in which the laser is mounted**. The Office Action states in reference to claim 7 that Nagano discloses a hermetically sealed housing at column 7, line 52 through column 8, line 3. We respectfully traverse, as Nagano does not teach or suggest such a sealed housing - hermetically sealed or otherwise. Nagano at column 7, line 52 through column 8, line 3, shows various elements "integrated into a module", but it does not teach or suggest a hermetically sealed housing.

All of Nagano's figures show a separated structure with individual and distinctly un-sealed elements. A "hermetically sealed housing" is not the same as an integrated module. An "integrated module" merely suggests affixing various elements to the same substrate or structure - it says nothing of sealing those elements in a housing.

As stated in The American Heritage College Dictionary, 3rd Edition (1997), "hermetically" is the adverb form of "hermetic", which is defined as:

"1. Completely sealed, especially against the escape of air."

Such hermetic sealing is not discussed in Nagano.

Further, in the Examiner's reply to Applicant's arguments in responding to the first office action, dated July 31, 2002, the Examiner argues that "it is inherent that the module into which the various elements are placed is hermetically sealed." We disagree with the Examiner's assertion of inherency here. **In accordance with MPEP 2112**, Applicants request that the Examiner provide rationale and evidence tending to show the asserted inherency. As cited in MPEP 2112 (at p. 2100-52):

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the

allegedly inherent characteristic necessarily flows from the teachings of the prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd Pat. App. & Inter. 1990) (emphasis in original).

A hermetically sealed housing does not "necessarily flow" from Nagano's integrated module, especially as Nagano discusses its module only in light of the value of miniaturizing it by limiting the optical path distances between its various elements. This does not necessarily require a hermetically sealed housing. In fact, a fair reading of Nagano indicates that Nagano did not contemplate putting his components in a hermetically sealed housing.

C) Components Mounted on Window of Housing

Claim 7 further recites: "the quarter wave retarder plate is **mounted on the window of the housing.**" Claim 11 recites: "the quarter wave retarder plate is **disposed to form a window of the housing.**" Nagano does not teach or suggest either of these structural elements. Nagano makes no mention or suggestion of a housing with a window, and as such it makes no suggestion of mounting a quarter wave retarder plate on such a window or disposing such a plate as the window of the housing.

Respectfully, Nagano does not teach the invention to which independent claims 7 and 11 are directed. Further, as claim 10 is dependent from claim 7, claim 10 should be allowable for at least the same reasons that claim 7 is allowable as described above.

Claims 24 and 25

As to claims 24 and 25, they each state in pertinent part: "the laser has an associated oscillation mode, and the reflected light, after passing through the quarter wave plate, has a **polarization state that does not couple back into the laser's oscillation mode.**" This is not taught or suggested by Nagano. As stated above, Nagano teaches re-directing the

reflected light away from the light source, so the oscillation mode of the laser or the effects of reflected light coupling back into the laser are not discussed therein. In Nagano, laser oscillation modes and coupling reflected light back into the laser do not matter, because no light is reflected back to the laser. As noted above, Nagano goes to great lengths to re-direct reflected light to detectors that are physically separated from laser - i.e. along a different path than that of the originally transmitted light.

Further, in the Examiner's reply to Applicant's arguments in responding to the first office action, dated July 31, 2002, it is argued that these elements in claims 24 and 25 are inherent. We disagree with the Examiner's assertion of inherency here, and we request, in accordance with MPEP 2112, that the Examiner provide rationale and evidence tending to show the asserted inherency.

Applicants have canceled claims 3, 4, 8, 9, 12, 13, 17-20 and 22 in order to place this application in condition for allowance. We do not agree with, nor do we acquiesce in, the rejections stated in the office action mailed on December 3, 2002. These cancellations are not made for reasons of patentability. We therefore reserve the right to prosecute these canceled claims separately in the future.

35 U.S.C. 103(a) Rejections

Amendments to claim 5 are supported at least by: Figure 7B; and the specification at page 9, line 29 through page 10, line 12. No new matter has been added by these amendments.

Claim 5 recites in pertinent part: "a sealed housing in which the laser is mounted", "a quarter wave retarder plate mounted on the window of the sealed housing", "a linear polarizer mounted on the window of the sealed housing" and wherein "the linear polarizer blocks the reflected light." Nagano does not teach or suggest these elements. As noted

above in relation to claims 7, 11 and 15, Nagano does not teach a sealed housing - hermetically sealed or otherwise. Further, Nagano does not teach that a quarter wave retarder plate is mounted on a window of the sealed housing. Nagano does not teach a linear polarizer as claimed, and it certainly does not teach mounting one on the window of a sealed housing.

Further, as correctly noted by the Examiner, Nagano does not teach the function of the linear polarizer blocking the reflected light after it passes through the quarter wave retarder plate. It should be noted that Nagano is focused on optical heads used to project light onto an optical medium for reading information from and writing information to that medium (See, e.g., Nagano column 1, lines 13-15). Nagano is primarily concerned with detecting reflected light, and therefore it must transmit - not block - that light to detectors.

We disagree with the Examiner's statement that the addition of a linear polarizer is "a matter of design choice." As stated in the specification, the purpose of the linear polarizer is to block light from being reflected back into the laser cavity (specification page 4, line 5). Further, several advantages to this configuration are listed at page 8, lines 14-23. Specifically, the use of the linear polarizer to block reflected light may be essential in a laser transmitter with an unpolarized output, or in a laser transmitter wherein the laser is adversely affected by light not in its oscillation mode. These are problems not addressed in Nagano, and accordingly Nagano does not teach or suggest the claimed solutions to these problems.

Additionally, Applicants disagree with the statement in the Office Action that "the invention would perform equally well with the reflected light being blocked by the polarizing beam splitter." Nagano's polarizing beam splitter does not

block the reflected light - it transmits it (see, e.g., Nagano, column 6, line 49 through column 7, line 21).

Linear Polarizer IS NOT THE SAME as Polarizing
Diffractive Element of Nagano

We note for the Examiner that a linear polarizer as disclosed in the application is not the same as the polarizing diffractive element used throughout Nagano. These components DO NOT perform the same function, and one cannot be substituted for the other. They are completely different in terms of their optical properties.

In Nagano, the polarizing diffractive element is used to diffract and transmit light into multiple diffractive orders. As a result, the polarizing diffractive element of Nagano redirects and transmits the reflected light. The Applicant's linear polarizer is used to transmit light of a given linear polarization and block light with a linear polarization orthogonal to that given polarization. The various configurations of Nagano's apparatus would not work for the purpose intended in the claimed invention, because Nagano operates by transmitting, not blocking, reflected light.

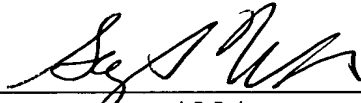
Respectfully, Nagano does not teach the invention to which independent claim 5 is directed, nor claims 6 and 28 that depends from claim 5. Claims 6 and 28 should be allowable for at least the same reasons that claim 5 is allowable as described above.

Applicants have canceled claim 26 in order to place this application in condition for allowance. We do not agree with, nor do we acquiesce in, the rejections stated in the office action mailed on December 3, 2002. These cancellations are not made for reasons of patentability. We therefore reserve the right to prosecute these canceled claims separately in the future.

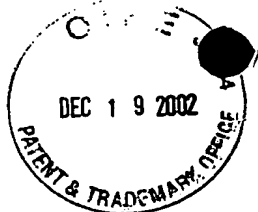
In light of the above amendments and remarks, the Applicant respectfully requests that the Examiner reconsider this application with a view towards allowance. The Examiner is invited to call the undersigned attorney if a telephone call could help resolve any remaining items.

Respectfully submitted,

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Appendix A
Changes to the Claims

The rewritten claims were revised as follows:

1. (Amended) Laser apparatus for generating laser light to be transmitted through an optical transmission system, comprising:

a laser that emits light that is substantially linearly polarized; and

a quarter wave retarder plate, disposed with respect to the laser so that the emitted laser light passes through the quarter wave retarder plate prior to transmission of the emitted laser light through the optical transmission system, the quarter wave retarder plate causing the emitted laser light to become circularly polarized with a predefined handedness;

wherein

the quarter wave retarder plate is also disposed so that light reflected by the optical transmission system back toward the laser passes through the quarter wave retarder plate prior to reaching the laser, the quarter wave retarder plate causing the reflected light to become linearly polarized with a polarization that is orthogonal to the emitted laser light emitted by the laser; and

the laser apparatus, including the quarter wave retarder plate, is configured to direct the reflected light, polarized orthogonally to the light emitted by the laser, back in a direction of the laser and at least partially back into the laser.

5. (Amended) Laser apparatus for generating laser light to be transmitted through an optical transmission system, comprising:

a laser that emits light that is substantially linearly polarized;

a sealed housing in which the laser is mounted, the housing having a window through which the emitted laser light is transmitted;

a quarter wave retarder plate mounted on the window of the sealed housing, disposed with respect to the laser so that the emitted laser light passes through the quarter wave retarder plate prior to transmission of the emitted laser light through the optical transmission system, the quarter wave retarder plate causing the emitted laser light to become circularly polarized with a predefined handedness; and

a linear polarizer mounted on the window of the sealed housing and disposed between the laser and the quarter wave retarder plate;

wherein

the quarter wave retarder plate is also disposed so that light reflected by the optical transmission system back toward the laser passes through the quarter wave retarder plate prior to reaching the laser, the quarter wave retarder plate causing the reflected light to become linearly polarized with a polarization that is orthogonal to the emitted laser light emitted by the laser; and

the linear polarizer blocks the reflected light after it passes through the quarter wave retarder plate.

7. (Amended) [The laser apparatus of claim 1, including] Laser apparatus for generating laser light to be transmitted through an optical transmission system, comprising:

a laser that emits light that is substantially linearly polarized; and

a quarter wave retarder plate, disposed with respect to the laser so that the emitted laser light passes through the quarter wave retarder plate prior to transmission of the emitted laser light through the optical transmission system, the quarter wave retarder plate causing the emitted laser

light to become circularly polarized with a predefined handedness;

a hermetically sealed housing in which the laser is mounted, the housing having a window through which the emitted laser light is transmitted;

wherein

the quarter wave retarder plate is also disposed so that light reflected by the optical transmission system back toward the laser passes through the quarter wave retarder plate prior to reaching the laser, the quarter wave retarder plate causing the reflected light to become linearly polarized with a polarization that is orthogonal to the emitted laser light emitted by the laser;

the laser apparatus, including the quarter wave retarder plate, is configured to direct the reflected light, polarized orthogonally to the light emitted by the laser, back in a direction of the laser and at least partially back into the laser; and

[wherein] the quarter wave retarder plate is [disposed to form part of] mounted on the window of the housing.

10. (Amended) The laser apparatus of claim [9] 7, further including a lens disposed between the laser and the optical transmission system, wherein the quarter wave retarder plate is disposed between the laser and the lens.

11. (Amended) [The laser apparatus of claim 1, including] Laser apparatus for generating laser light to be transmitted through an optical transmission system, comprising:

a laser that emits light that is substantially linearly polarized; and

a quarter wave retarder plate, disposed with respect to the laser so that the emitted laser light passes through the quarter wave retarder plate prior to transmission of the emitted laser light through the optical transmission system,

the quarter wave retarder plate causing the emitted laser light to become circularly polarized with a predefined handedness;

a hermetically sealed housing in which the laser is mounted[,];

wherein

the quarter wave retarder plate is disposed to form a window of the housing through which the emitted laser light is transmitted;

the quarter wave retarder plate is also disposed so that light reflected by the optical transmission system back toward the laser passes through the quarter wave retarder plate prior to reaching the laser, the quarter wave retarder plate causing the reflected light to become linearly polarized with a polarization that is orthogonal to the emitted laser light emitted by the laser; and

the laser apparatus, including the quarter wave retarder plate, is configured to direct the reflected light, polarized orthogonally to the light emitted by the laser, back in a direction of the laser and at least partially back into the laser.

15. (Amended) Laser apparatus for generating laser light to be transmitted through an optical transmission system, comprising:

a laser that emits light that is substantially linearly polarized;

a hermetically sealed housing in which the laser is mounted, the housing having a window through which the emitted laser light is transmitted; and

a quarter wave retarder plate, disposed with respect to the laser so that the emitted laser light passes through the quarter wave retarder plate prior to transmission of the emitted laser light through the optical transmission system, the quarter wave retarder plate causing the emitted laser

light to become circularly polarized with a predefined handedness;

wherein

the quarter wave retarder plate is also disposed so that light reflected by the optical transmission system back toward the laser passes through the quarter wave retarder plate prior to reaching the laser, the quarter wave retarder plate causing the reflected light to become linearly polarized with a polarization that is orthogonal to the emitted laser light emitted by the laser; and

the laser apparatus, including the quarter wave retarder plate, is configured to direct the reflected light, polarized orthogonally to the light emitted by the laser, back in a direction of the laser and at least partially back into the laser.

28. (Amended) The laser apparatus of claim 5, [including a hermetically sealed housing in which the laser is mounted], wherein the quarter wave retarder plate is disposed to form a window of the housing through which the emitted laser light is transmitted.